

## **Appendix 3-A (Risk Chapter)**

### **Flexographic Ink Formulations and Structures**

Table 3-A.1 lists every flexographic ink chemical that was studied in this CTSA, along with its CAS number and other names by which the chemical is known.

Table 3-A.2 lists all the ink additives that were used during the performance demonstrations.

Following these tables is an alphabetical display of the chemical structures for all substances listed in Table 3-A.1. in the flexographic ink formulations that were supplied for the performance demonstrations.

Table 3-A.1 Flexographic Ink Formulation Chemicals

Chemical substance	CAS number	Synonym
Acrylated epoxy polymer	NK <sup>a</sup>	
Acrylated oligoamine polymer	NK	
Acrylated polyester polymer #1	NK	
Acrylated polyester polymer #2	NK	
Acrylic acid-butyl acrylate-methyl methacrylate-styrene polymer	27306-39-4	2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, ethenylbenzene and 2-propenoic acid
Acrylic acid polymer, acidic #1	NK	
Acrylic acid polymer, acidic #2	NK	
Acrylic acid polymer, insoluble	NK	
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	Ethoxylated C11-15-secondary alcohols
Amides, tallow, hydrogenated	61790-31-6	Hydrogenated tallow amides
Ammonia	7664-41-7	
Ammonium hydroxide	1336-21-6	
Barium	7440-39-3	
2-Benzyl-2-(dimethylamino)-4'-morpholinobutyrophenone	119313-12-1	1-Butanone, 2-(dimethylamino)-1-[4-(4-morpholinyl)phenyl]-2-(phenylmethyl)-
Butyl acetate	123-86-4	Acetic acid butyl ester
Butyl acrylate-methacrylic acid-methyl methacrylate polymer	25035-69-2	2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate
Butyl carbitol	112-34-5	2-(2-Butoxyethoxy)ethanol
C.I. Basic Violet 1, molybdatephosphate	67989-22-4	Benzenamine, 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl], N-Me derivs., molybdatephosphates
C.I. Basic Violet 1, molbdatetungstatephosphate	1325-82-2	Benzenamine, 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl], N-Me derivs., molbdatetungstatephosphates
C.I. Pigment Blue 15	147-14-8	Copper(II) phthalocyanine
C.I. Pigment Blue 61	1324-76-1	Benzenesulfonic acid, ((4-((4-(phenylamino)phenyl)(4-(phenylamino)-2,5-cyclohexadien-1-ylidene)methyl)phenyl)amino)-
C.I. Pigment Green 7	1328-53-6	Copper phthalocyanine green derivative
C.I. Pigment Red 23	6471-49-4	2-Naphthalenecarboxamide, 3-hydroxy-4-((2-methoxy-5-nitrophenyl)azo)-N-(3-nitrophenyl)
C.I. Pigment Red 48, barium salt (1:1)	7585-41-3	2-Naphthalenecarboxylic acid, 4-((5-chloro-4-methyl-2-sulfophenyl)azo)3-hydroxy-, barium salt (1:1)
C.I. Pigment Red 48, calcium salt (1:1)	7023-61-2	2-Naphthalenecarboxylic acid, 4-((5-chloro-4-methyl-2-sulfophenyl)azo)3-hydroxy-, calcium salt (1:1)

Table 3-A.1 Flexographic Ink Formulation Chemicals (continued)

Chemical substance	CAS number	Synonym
C.I. Pigment Red 52, calcium salt (1:1)	17852-99-2	2-Naphthalenecarboxylic acid, 4-((4-chloro-5-methyl-2-sulfophenyl)azo)-3-hydroxy-, calcium salt (1:1)
C.I. Pigment Red 269	67990-05-0	2-Naphthalenecarboxamide, N-(5-chloro-2-methoxyphenyl)-3-hydroxy-4-[[2-methoxy-5-[(phenylamino)carbonyl]phenyl]azo]-
C.I. Pigment Violet 23	6358-30-1	Diindolo(3,2-b:3',2'-m)triphenodioxazine, 8,18-dichoro-5,15-diethyl-5,15-dihydro-
C.I. Pigment Violet 27	12237-62-6	Ferrate(4-), hexakis(Cyano-C)-, methylated 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl]benzenamine copper (2+) salts
C.I. Pigment White 6	13463-67-7	Titanium oxide ( $TiO_2$ )
C.I. Pigment White 7	1314-98-3	Zinc sulfide
C.I. Pigment Yellow 14	5468-75-7	Butanamide, 2,2'-(3,3'-dichloro(1,1'-biphenyl)-4,4'-diyl)bis(azo))bis(N-(2-methylphenyl)-3-oxo-
C.I. Pigment Yellow 74	6358-31-2	Butanamide, 2-((2-methoxy-4-nitrophenyl)azo)-N-(2-methoxyphenyl)-3-oxo-
Citric acid	77-92-9	2-Hydroxy-1,2,3-tricarboxylic acid
D&C Red No. 7	5281-04-9	3-Hydroxy-4-((4-methyl-2-sulfophenyl)azo)-2-naphthalenecarboxylic acid, calcium salt
Dicyclohexyl phthalate	84-61-7	1,2-Benzenedicarboxylic acid, dicyclohexyl ester
Diocetyl sulfosuccinate, sodium salt	577-11-7	Succinic acid, sulfo-, 1,4-bis(2-ethylhexyl)ester, Na salt
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	
Dipropylene glycol diacrylate	57472-68-1	2-Propenoic acid, oxybis(methyl-2,1-ethanediyl) ester
Dipropylene glycol methyl ether	34590-94-8	Propanol, (2-methoxymethylethoxy)-
Distillates (petroleum), hydrotreated light	64742-47-8	Kerosene (petroleum), hydrotreated
Distillates (petroleum), solvent-refined light paraffinic	64741-89-5	Petroleum distillates
Erucamide	112-84-5	cis-13-Docosenoamide
Ethanol	64-17-5	Ethyl alcohol
Ethanolamine	141-43-5	2-Aminoethanol
Ethoxylated tetramethyldecyndiol	9014-85-1	Poly(oxy-1,2-ethanediyl), .alpha.,.alpha.'-[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[.omega.-hydroxy-
Ethyl acetate	141-78-6	Acetic acid, ethyl ester
Ethyl carbitol	111-90-0	Ethanol, 2-(2-ethoxyethoxy)-
Ethyl 4-dimethylaminobenzoate	10287-53-3	Benzoic acid, 4-(dimethylamino)-, ethyl ester
2-Ethylhexyl diphenyl phosphate	1241-94-7	Phosphoric acid, 2-ethylhexyl diphenyl ester

Table 3-A.1 Flexographic Ink Formulation Chemicals (continued)

Chemical substance	CAS number	Synonym
Fatty acid, dimer-based polyamide	NK	
Fatty acids, C18-unsatd., dimers, polymers with ethylenediamine, hexamethylenediamine, and propionic acid	67989-30-4	
Glycerol propoxylate triacrylate	52408-84-1	Propoxylated glycerol triacrylate
n-Heptane	142-82-5	
1,6-Hexanediol diacrylate	13048-33-4	2-Propenoic acid, 1,6-hexanediyl ester
1-Hydroxycyclohexyl phenyl ketone	947-19-3	(1-Hydroxycyclohexyl)phenylmethanone
Hydroxylamine derivative	NK	
2-Hydroxy-2-methylpropiophenone	7473-98-5	2-Hydroxy-2-methyl-1-phenyl-1-propanone
Hydroxypropyl acrylate	25584-83-2	2-Propenoic acid, monoester with 1,2-propanediol
Isobutanol	78-83-1	2-Methyl-1-propanol
Isopropanol	67-63-0	2-Propanol
Isopropoxyethoxytitanium bis(acetylacetone)	68586-02-7	Titanium, ethoxybis(2,4-pentanedionato-O,O')(2-propanolato)-
2-Isopropylthioxanthone	5495-84-1	9H-Thioxanthen-9-one, 2-(1-methylethyl)-
4-Isopropylthioxanthone	83846-86-0	9H-Thioxanthen-9-one, 4-(1-methylethyl)-
Kaolin	1332-58-7	Aluminum silicate hydroxide
Methylenedisalicylic acid	27496-82-8	Methylenebis[2-hydroxybenzoic acid]
2-Methyl-4'-(methylthio)-2-morpholinopropiophenone	71868-10-5	Morpholinopropiophenone, 2-methyl-4'-(methylthio)-
Mineral oil	8012-95-1	Paraffin oils
Nitrocellulose	9004-70-0	Cellulose nitrate
Paraffin wax	8002-74-2	Paraffin waxes and hydrocarbon waxes
Phosphine oxide, bis(2,6-dimethoxybenzoyl) (2,4,4-trimethylpentyl)	145052-34-2	
Polyethylene	9002-88-4	Ethene polymer
Polyethylene glycol	25322-68-3	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-
Polyol derivative A (generic ID) <sup>b</sup>		
Polytetrafluoroethylene	9002-84-0	
Propanol	71-23-8	1-Propanol
Propyl acetate	109-60-4	Acetic acid, propyl ester
Propylene glycol methyl ether	107-98-2	1-Methoxy-2-propanol
Propylene glycol propyl ether	1569-01-3	1-Propoxy-2-propanol
Resin acids, hydrogenated, methyl esters	8050-15-5	

Table 3-A.1 Flexographic Ink Formulation Chemicals (continued)

Chemical substance	CAS number	Synonym
Resin, acrylic	NK	
Resin, miscellaneous	NK	Resin, miscellaneous
Rosin, fumarated, polymer with diethylene glycol and pentaerythritol	68152-50-1	Fumarated rosin, diethylene glycol pentaerythritol polymer
Rosin, fumarated, ethylene polymer derivitized	NK	
Rosin, polymerized	65997-05-9	
Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	68909-20-6	
Silica	7631-86-9	Silicon dioxide
Silicone oil	63148-62-9	Siloxanes and silicones, di-Me
Siloxanes and silicones, di-Me, 3-hydroxypropyl Me, ethers with polyethylene glycol acetate	70914-12-4	
Solvent naphtha (petroleum), light aliphatic	64742-89-8	VM&P naphtha, Skellysolve
Styrene	100-42-5	Ethenylbenzene
Styrene acrylic acid polymer #1	NK	
Styrene acrylic acid polymer #2	NK	
Styrene acrylic acid resin	NK	
Tetramethyldecyndiol	126-86-3	2,4,7,9-Tetramethyl-5-decyne-4,7-diol
Thioxanthone derivative	NK	
Trimethylolpropane ethoxylate triacrylate	28961-43-5	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propenyl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol
Trimethylolpropane propoxylate triacrylate	53879-54-2	Poly(oxy(methyl-1,2-ethanediyl)), .alpha.-hydro-.omega.-((1-oxo-2-propenyl)oxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)
Trimethylolpropane triacrylate	15625-89-5	2-Propenoic acid, 2-ethyl-2(((1-oxo-2-propenyl)oxy)methyl-1,3-propanediyl ester
Urea	57-13-6	

<sup>a</sup> Not known.<sup>b</sup> Actual chemical name is confidential business information.

Table 3-A.2 Ink Additives Used in the Performance Demonstrations

Ink formulation	Site	Color	Chemical
Solvent-based Ink #S1	9B	blue	propanol
		green	none
		white	propanol
		cyan	n-propyl acetate
		magenta	propylene glycol ether
			trade secret
Solvent-based Ink #S2	5	all colors	none
	7	white	propanol
		all other colors	none
	10	blue, green	none
		white	propanol
		cyan	propylene glycol monomethyl ether
			2-methoxy-1-propanol
		magenta	propylene glycol monomethyl ether
			2-methoxy-1-propanol
Water-based Ink #W1	4	white	ethoxylated tetramethyl-decyndiol
		all other colors	none
Water-based Ink #W2	1	blue	isobutanol
			ethyl carbitol
			propanol
		green	none
		white	propanol
		cyan	isobutanol
			ethyl carbitol
			ammonia
		magenta	isobutanol
			ethyl carbitol

**Table 3-A.2 Ink Additives Used in the Performance Demonstrations (continued)**

Ink formulation	Site	Color	Chemical
Water-based Ink #W3	2	blue	propanol
			ammonia
			asopropanol
			polyfunctional aziridine
			other compounds
		green	propanol
			ammonia
			isopropanol
		white	propanol
			ammonia
			isopropanol
	3	cyan	ammonia
		magenta	ammonia
			propanol
			isopropanol
		blue	propanol
			ammonia
		green	ammonia
		white	extender
			propanol
			ammonia
		cyan	ammonia
		magenta	2-butoxyethanol
			ammonia
Water-based Ink #W4	9A	blue	propanol
			ammonia
		green	ammonia
		white	none
		cyan	solids
			ethyl carbitol
			petroleum distillate
			propanol
			ammonia
		magenta	ammonia
UV-cured Ink #U1	11	green	1,6-hexanediol diacrylate
		all other colors	none
UV-cured Ink #U2	6	all colors	none
UV-cured Ink #U3	8	all colors	none

**Chemical Properties Data**

NK = not known  
 NAVG = number average molecular weight  
 NA = not available  
 E = estimated

Acrylated epoxy polymer, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure: An average of 2 acrylates/molecule
Molecular Formula: C, H, O	
Molecular Weight: NAVG 1500	R and R' are not known
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Curable resin	

Acrylated oligoamine polymer, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure: An average of 2 acrylates/molecule
Molecular Formula: C, H, N, O	
Molecular Weight: NAVG 2000	R = polymer
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Curable resin	

Acrylated polyester polymer #1, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: Ebecryl 870	Structure: An average of 5-6 acrylates/molecule
Molecular Formula: C, H, O	
Molecular Weight: NAVG 4350	
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Curable resin	

Acrylated polyester polymer #2, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure: An average of 4 acrylates/molecule
Molecular Formula: C, H, O	
Molecular Weight: NAVG 1500	
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Curable resin	

<p style="text-align: center;">Acrylic acid-butyl acrylate-methyl methacrylate-styrene polymer, CAS # 27306-39-4</p>	
Chemical Properties and Information	
<p>Chemical Name: 2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, ethenylbenzene and 2-propenoic acid</p> <p>Synonyms: NK</p> <p>Molecular Formula:</p> <p>Molecular Weight: &gt;3000 (E)</p> <p>Melting Point: &gt;100 °C (E)</p> <p>Boiling Point: NA °C (E)</p> <p>Vapor Pressure: &lt;0.000001 mm Hg (E)</p> <p>Flash Point: NA °C (M)</p> <p>Water Solubility: &lt;0.000001 g/L (E)</p> <p>Density: 1 g/cm<sup>3</sup> (E)</p> <p><math>\log_{10}K_{ow}</math>: NA (E)</p> <p><math>\log_{10}K_{oc}</math>: NA (E)</p> <p><math>\log_{10}BCF</math>: NA (E)</p> <p>Function in ink: Resin</p>	<p>Structure:</p> <p>Henry's Law: NA atm·m<sup>3</sup>/mol (E)</p>

<p style="text-align: center;">Acrylic acid polymer, acidic #1, CAS # NK</p>	
Chemical Properties and Information	
<p>Chemical Name: NK</p> <p>Synonyms: NK</p> <p>Molecular Formula: (C<sub>3</sub>H<sub>4</sub>O<sub>2</sub>.C<sub>2</sub>H<sub>4</sub>O)<sub>x</sub></p> <p>Molecular Weight: NAVG 5000 (E)</p> <p>Melting Point: NA °C (E)</p> <p>Boiling Point: NA °C (E)</p> <p>Vapor Pressure: &lt;0.000001 mm Hg</p> <p>Flash Point: NA °C (M)</p> <p>Water Solubility: &lt;0.000001 g/L (E)</p> <p>Density: 1 g/cm<sup>3</sup> (E)</p> <p><math>\log_{10}K_{ow}</math>: NA (E)</p> <p><math>\log_{10}K_{oc}</math>: NA (E)</p> <p><math>\log_{10}BCF</math>: NA (E)</p> <p>Function in ink: Resin</p>	<p>Structure:</p> <p>R not equal to H</p> <p>Henry's Law: NA atm·m<sup>3</sup>/mol (E)</p>

Acrylic acid polymer, acidic #2, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: $(C_3H_4O_2)_x$	
Molecular Weight: NAVG 5000 (E)	
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Resin	R not equal to H

Acrylic acid polymer, insoluble, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: C, H, O	
Molecular Weight: NAVG >10,000 (E)	
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Resin	R not equal to H

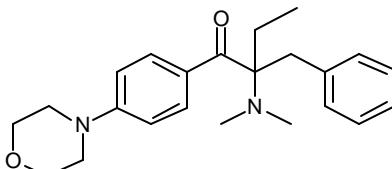
Alcohols, C11-15-secondary, ethoxylated, CAS # 68131-40-8	
Chemical Properties and Information	
Chemical Name: Alcohols, C11-15-secondary, ethoxylated	
Synonyms: Ethoxylated C11-15-secondary alcs.	Structure:
Molecular Formula: C, H, O	
Molecular Weight: 347 (n = 3)	
Melting Point: °C (E)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: Dispersible g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Dispersant	R+R' = C10-14 alkyl

Amides, tallow, hydrogenated, CAS # 61790-31-6	
Chemical Properties and Information	
Chemical Name: Amides, tallow, hydrogenated	
Synonyms: Armid HT	Structure:
Molecular Formula: C <sub>18</sub> H <sub>37</sub> NO (TYPCL)	
Molecular Weight: 283.50 (TYPCL)	
Melting Point: 152 °C (E)	
Boiling Point: >400 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.00003 g/L (E)	Henry's Law: 1E-6 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 6.70 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 5.01(E)	
Log <sub>10</sub> BCF: 4.86 (E)	
Function in ink: Vehicle	<chem>CH3(CH2)12-16C(=O)NH2</chem>

Ammonia, CAS # 7664-41-7	
Chemical Properties and Information	
Chemical Name: Ammonia	
Synonyms: None	Structure:
Molecular Formula: NH <sub>3</sub>	
Molecular Weight: 17.03	
Melting Point: -77.7 °C (M)	
Boiling Point: -33.35 °C (M)	
Vapor Pressure: >2160 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 310 (at 25 °C) g/L (M)	Henry's Law: NA atm-m <sup>3</sup> /mol
Density: vapor: 0.5967 (air = 1) (M) liquid at -33 °C and 1 atm: 0.682 g/cm <sup>3</sup>	POTW Overall Removal Rate (%):
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Buffer	

Ammonium hydroxide, CAS # 1336-21-6	
Chemical Properties and Information	
Chemical Name: Ammonium hydroxide	
Synonyms: Ammonia aqueous, Aqua ammonia	Structure:
Molecular Formula: H <sub>4</sub> N.HO	
Molecular Weight: 35.05	
Melting Point: NA °C (M)	
Boiling Point: NA °C (M)	
Vapor Pressure: 2160 mm Hg (M)	
Flash Point: None °C (M)	
Water Solubility: >1000 (miscible) g/L	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 0.900 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Buffer	Approximately 28-29% NH <sub>3</sub> in water.

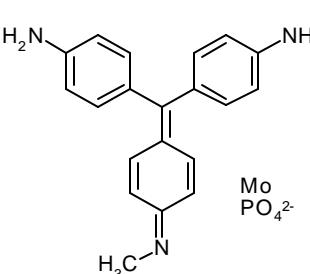
Barium, CAS # 7440-39-3	
Chemical Properties and Information	
Chemical Name: Barium	
Synonyms: None	Structure:
Molecular Formula: Ba	Ba
Molecular Weight: 137.34	
Melting Point: about 710 °C (E)	
Boiling Point: about 1600 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: Reacts	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 3.60 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Reactant	

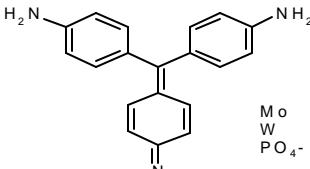
2-Benzyl-2-(dimethylamino)-4'-morpholinobutyrophenone, CAS # 119313-12-1	
Chemical Properties and Information	
Chemical Name: 1-Butanone, 2-(dimethylamino)-1-[4-(4-morpholinyl)phenyl]-2-(phenylmethyl)-	
Synonyms: 2-Benzyl-2-(dimethylamino)-1-(4-morpholinophenyl)-1-butanone	Structure:
Molecular Formula: C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	
Molecular Weight: 366.51	
Melting Point: 116-119 °C (M)	
Boiling Point: 457 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.0061 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 4.50 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 3.66 (E)	
Log <sub>10</sub> BCF: 3.19 (E)	
Function in ink: NA, initiator (E)	

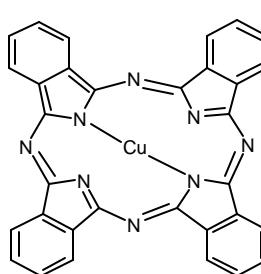
Butyl acetate, CAS # 123-86-4	
Chemical Properties and Information	
Chemical Name: Acetic acid, butyl ester	
Synonyms: Butyl ethanoate, 1-Butyl acetate	Structure:
Molecular Formula: C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	
Molecular Weight: 116.16	
Melting Point: -78 °C (M)	
Boiling Point: 124-126 °C (M)	
Vapor Pressure: 11.5 mm Hg (M)	
Flash Point: 22 °C (M)	
Water Solubility: 6.29 g/L (M)	Henry's Law: 0.000315 atm-m <sup>3</sup> /mol (E)
Density: 0.882 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 1.78 (M), 1.85 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.319 (E)	
Log <sub>10</sub> BCF: 1.123 (E)	
Function in ink: Solvent	

Butyl acrylate-methacrylic acid-methyl methacrylate polymer, CAS # 25035-69-2	
Chemical Properties and Information	
Chemical Name: 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate	
Synonyms: Methacrylic acid, polymer with butyl acrylate and methyl methacrylate	Structure:
Molecular Formula:	
Molecular Weight: >3000 (E)	
Melting Point: NA °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	

Butyl carbitol, CAS # 112-34-5	
Chemical Properties and Information	
Chemical Name: 2-(2-Butoxyethoxy)ethanol	
Synonyms: Butoxydiethylene glycol, Diethylene glycol n-butyl ether	Structure:
Molecular Formula: C <sub>8</sub> H <sub>18</sub> O <sub>3</sub>	<chem>C4H9OCCCOCCCO</chem>
Molecular Weight: 162.25	
Melting Point: -68.1 °C (M)	
Boiling Point: 230.4 °C (M)	
Vapor Pressure: 0.0219 mm Hg (M)	
Flash Point: 110 °C open, 78 °C closed cup	
Water Solubility: 1000 g/L (miscible) (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 0.967 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.56 (M), 0.29 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.0 (E)	
Log <sub>10</sub> BCF: 0.196 (E)	
Function in ink: Solvent	

C.I. Basic Violet 1, molybdatephosphate, CAS # 67989-22-4	
Chemical Properties and Information	
Chemical Name: Benzenamine, 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl], N-Me-derivs., molybdatephosphates	
Synonyms: None	Structure:
Molecular Formula: C <sub>20</sub> H <sub>19</sub> N <sub>3</sub> .Mo.H <sub>3</sub> O <sub>4</sub> P	
Molecular Weight: 350 (E)	
Melting Point: >250 (dec) °C(E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.0001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

<b>C.I. Basic Violet 1, molybdatetungstatephosphate, CAS # 1325-82-2</b>	
<b>Chemical Properties and Information</b>	
Chemical Name: Benzenamine, 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl]-, N-Me derivs, molybdatetungstatephosphate	
Synonyms: C.I. Pigment Violet 3  Molecular Formula: Molecular Weight: >350 (E) Melting Point: >250 (dec) °C (E) Boiling Point: NA °C (E) Vapor Pressure: <0.000001 mm Hg Flash Point: NA °C (M) Water Solubility: <0.001 g/L (E) Density: 1.5 g/cm <sup>3</sup> (E) $\text{Log}_{10}K_{ow}$ : NA (E) $\text{Log}_{10}K_{oc}$ : NA (E) $\text{Log}_{10}\text{BCF}$ : NA (E) Function in ink: Pigment	Structure:  Henry's Law: NA atm-m <sup>3</sup> /mol (E)

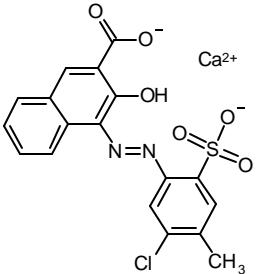
<b>C.I. Pigment Blue 15, CAS # 147-14-8</b>	
<b>Chemical Properties and Information</b>	
Chemical Name: Copper(II)phthalocyanine	
Synonyms: None  Molecular Formula: C <sub>32</sub> H <sub>16</sub> CuN <sub>8</sub> Molecular Weight: 576.08 Melting Point: NA °C (E) Boiling Point: >450 °C (E) Vapor Pressure: <0.000001 mm Hg Flash Point: NA °C (M) Water Solubility: <0.001 g/L (E) Density: 1.5 g/cm <sup>3</sup> (E) $\text{Log}_{10}K_{ow}$ : NA (E) $\text{Log}_{10}K_{oc}$ : NA (E) $\text{Log}_{10}\text{BCF}$ : NA (E) Function in ink: Pigment	Structure:  Henry's Law: NA atm-m <sup>3</sup> /mol (E)

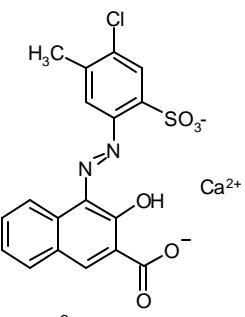
C.I. Pigment Blue 61, CAS # 1324-76-1	
Chemical Properties and Information	
Chemical Name: Benzenesulfonic acid, ((4-((4-(phenylamino)phenyl)(4-(phenylamino)-2,5-cyclohexadien-1-ylidene)methyl)phenyl)amino)-	
Synonyms: Reflex Blue R	Structure:
Molecular Formula: C <sub>37</sub> H <sub>29</sub> N <sub>3</sub> O <sub>3</sub> S	
Molecular Weight: 595.70	*Position unspecified
Melting Point: 350 °C (E)	
Boiling Point: >450 °C (E)	
Vapor Pressure: 0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 6.514 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 9.227 (E)	
Log <sub>10</sub> BCF: 4.721 (E)	
Function in ink: Pigment	

C.I. Pigment Green 7, CAS # 1328-53-6	
Chemical Properties and Information	
Chemical Name: C.I. Pigment Green 7	
Synonyms: Copper phthalocyanine Green PG-7	Structure:
Molecular Formula: Unspecified	3-A, page 18

<b>C.I. Pigment Red 23, CAS # 6471-49-4</b>	
Chemical Properties and Information	
Chemical Name: 2-Naphthalenecarboxamide, 3-hydroxy-4-((2-methoxy-5-nitrophenyl)azo)-N-(3-nitrophenyl)	
Synonyms: Naphthol Red B	Structure:
Molecular Formula: C <sub>24</sub> H <sub>17</sub> N <sub>5</sub> O <sub>7</sub>	
Molecular Weight: 487.43	
Melting Point: 322 °C (E)	
Boiling Point: >500 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: <1E-6 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 8.30 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 4.9 (E)	
Log <sub>10</sub> BCF: 6.08 (E)	
Function in ink: Pigment	

<b>C.I. Pigment Red 48, barium salt (1:1), CAS # 7585-41-3</b>	
Chemical Properties and Information	
Chemical Name: 2-Naphthalenecarboxylic acid, 4-[(5-chloro-4-methyl-2-sulfophenyl)azo]-3-hydroxy-, barium salt (1:1)	
Synonyms: None	Structure:
Molecular Formula: C <sub>18</sub> H <sub>13</sub> ClN <sub>2</sub> O <sub>6</sub> S.Ba	
Molecular Weight: 558.14	
Melting Point: >250 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.1 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

C.I. Pigment Red 48, calcium salt (1:1), CAS # 7023-61-2	
Chemical Properties and Information	
Chemical Name: 2-Naphthalenecarboxylic acid, 4-[(5-chloro-4-methyl-2-sulfophenyl)azo]-3-hydroxy-, calcium salt (1:1)	
Synonyms: None	Structure:
Molecular Formula: C <sub>18</sub> H <sub>13</sub> CIN <sub>2</sub> O <sub>6</sub> S.Ca	
Molecular Weight: 460.90	
Melting Point: >250 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	Henry's Law: NA atm·m <sup>3</sup> /mol (E)
Water Solubility: <0.1 g/L (E)	
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

C.I. Pigment Red 52, calcium salt (1:1), CAS # 17852-99-2	
Chemical Properties and Information	
Chemical Name: 2-Naphthalenecarboxylic acid, 4-((4-chloro-5-methyl-2-sulfophenyl)azo)-3-hydroxy-, calcium salt (1:1)	
Synonyms: C.I. Pigment Red 52:1	Structure:
Molecular Formula: C <sub>18</sub> H <sub>13</sub> CIN <sub>2</sub> O <sub>6</sub> S.Ca	
Molecular Weight: 460.90	
Melting Point: >250 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	Henry's Law: NA atm·m <sup>3</sup> /mol (E)
Water Solubility: <0.0001 g/L (E)	
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

<b>C.I. Pigment Red 269, CAS # 67990-05-0</b>	
Chemical Properties and Information	
<p>Chemical Name: 2-Naphthalenecarboxamide, N-(5-chloro-2-methoxyphenyl)-3-hydroxy-4-[[2-methoxy-5-[(phenylamino)carbonyl]phenyl]azo]-</p> <p>Synonyms: None</p> <p>Molecular Formula: C<sub>32</sub>H<sub>25</sub>CIN<sub>4</sub>O<sub>5</sub></p> <p>Molecular Weight: 581.03</p> <p>Melting Point: &gt;350 °C (E)</p> <p>Boiling Point: NA °C (E)</p> <p>Vapor Pressure: &lt;0.000001 mm Hg</p> <p>Flash Point: NA °C (M)</p> <p>Water Solubility: &lt;0.000001 g/L (E)</p> <p>Density: 1 g/cm<sup>3</sup> (E)</p> <p>Log<sub>10</sub>K<sub>ow</sub>: 8.24 (E)</p> <p>Log<sub>10</sub>K<sub>oc</sub>: 5.964 (E)</p> <p>Log<sub>10</sub>BCF: 6.033 (E)</p> <p>Function in ink: Pigment</p>	<p>Structure:</p> <p>Henry's Law: &lt;1E-8 atm-m<sup>3</sup>/mol (E)</p>

<b>C.I. Pigment Violet 23, CAS # 6358-30-1</b>	
Chemical Properties and Information	
<p>Chemical Name: Diindolo(3,2-b:3',2'-m)triphenodioxazine, 8,18-dichloro-5,15-diethyl-5,15-dihydro-</p> <p>Synonyms: None</p> <p>Molecular Formula: C<sub>34</sub>H<sub>22</sub>Cl<sub>2</sub>N<sub>4</sub>O<sub>2</sub></p> <p>Molecular Weight: 589.46</p> <p>Melting Point: &gt;200 °C (E)</p> <p>Boiling Point: NA °C (E)</p> <p>Vapor Pressure: &lt;0.000001 mm Hg</p> <p>Flash Point: NA °C (M)</p> <p>Water Solubility: &lt;0.0001 g/L (E)</p> <p>Density: 1 g/cm<sup>3</sup> (E)</p> <p>Log<sub>10</sub>K<sub>ow</sub>: NA (E)</p> <p>Log<sub>10</sub>K<sub>oc</sub>: NA (E)</p> <p>Log<sub>10</sub>BCF: NA (E)</p> <p>Function in ink: Pigment</p>	<p>Structure:</p> <p>Henry's Law: NA atm-m<sup>3</sup>/mol (E)</p>

C.I. Pigment Violet 27, CAS # 12237-62-6	
Chemical Properties and Information	
Chemical Name: Ferrate(4-), hexakis(cyano-C)-, methylated 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl]benzenamine copper(2+) salts	
Synonyms: None	Structure:
Molecular Formula: C, H, N . (CN) <sub>6</sub> Fe.	
Molecular Weight: >350 (E)	
Melting Point: >250 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.01 g/L	
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	Henry's Law: NA atm-m <sup>3</sup> /mol (E)

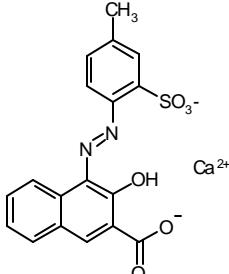
C.I. Pigment White 6, CAS # 13463-67-7	
Chemical Properties and Information	
Chemical Name: Titanium oxide	
Synonyms: Titanium dioxide, Unitane	Structure:
Molecular Formula: O <sub>2</sub> Ti	
Molecular Weight: 79.88 (based on empirical)	
Melting Point: 1855 °C (M)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	
Density: 4.23 (rutile); 3.9 (anatase); 4.13 (brookite)	Henry's Law: NA atm-m <sup>3</sup> /mol
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	POTW Overall Removal Rate
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

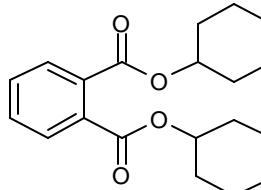
C.I. Pigment White 7, CAS # 1314-98-3	
Chemical Properties and Information	
Chemical Name: Zinc sulfide	
Synonyms: None	Structure:
Molecular Formula: ZnS	Zn=S
Molecular Weight: 97.43	
Melting Point: >500 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.0007 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 4.10 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

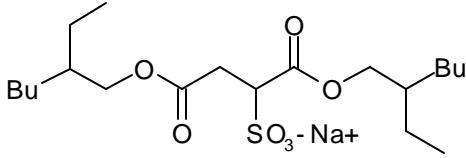
C.I. Pigment Yellow 14, CAS # 5468-75-7	
Chemical Properties and Information	
Chemical Name: Butanamide, 2,2'-(3,3'-dichloro(1,1'-biphenyl)-4,4'-diyl)bis(azo))bis(N-(2-methylphenyl)-3-oxo-	
Synonyms: None	Structure:
Molecular Formula: C <sub>34</sub> H <sub>30</sub> Cl <sub>2</sub> N <sub>6</sub> O <sub>4</sub>	
Molecular Weight: 657.52	
Melting Point: 350 °C (E)	
Boiling Point: >450 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 7.02 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 5.338 (E)	
Log <sub>10</sub> BCF: 5.105 (E)	
Function in ink: Pigment	

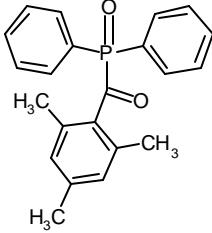
C.I. Pigment Yellow 74, CAS # 6358-31-2	
Chemical Properties and Information	
Chemical Name: Butanamide, 2-[(2-methoxy-4-nitrophenyl)azo]-N-(2-methoxyphenyl)-3-oxo-	Structure:
Synonyms: 2-[(2-Methoxy-4-nitrophenyl)azo]-o-acetoacetaniside	
Molecular Formula: C <sub>18</sub> H <sub>18</sub> N <sub>4</sub> O <sub>6</sub>	
Molecular Weight: 386.34	
Melting Point: 241 °C (E)	
Boiling Point: >500 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.0038 g/L (E)	Henry's Law: <1E-8 atm·m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 2.99 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.95 (E)	
Log <sub>10</sub> BCF: 2.04 (E)	
Function in ink: Pigment	

Citric acid, CAS # 77-92-9	
Chemical Properties and Information	
Chemical Name: 2-Hydroxy-1,2,3-propanetricarboxylic acid	
Synonyms: None	Structure:
Molecular Formula: C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	
Molecular Weight: 192.12	
Melting Point: 152-154 °C (M)	
Boiling Point: 407 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: > 600 g/L (E)	Henry's Law: <1E-8 atm·m <sup>3</sup> /mol (E)
Density: 1.665 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -1.72 (M), -1.67 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.0 (E)	
Log <sub>10</sub> BCF: -1.537 (E)	
Function in ink: Buffer	

D&C Red No. 7, CAS # 5281-04-9	
Chemical Properties and Information	
Chemical Name: 3-Hydroxy-4-((4-methyl-2-sulfophenyl)azo)-2-naphthylene carboxylic acid, calcium salt	Structure:
Synonyms: Pigment Red, CI 15850:1 (Ca salt)	
Molecular Formula: C <sub>18</sub> H <sub>14</sub> N <sub>2</sub> O <sub>6</sub> S.Ca	
Molecular Weight: 426.45	
Melting Point: >250 (dec) °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.001 g/L (E)	Henry's Law: NA atm·m <sup>3</sup> /mol (E)
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

Dicyclohexyl phthalate, CAS # 84-61-7	
Chemical Properties and Information	
Chemical Name: 1,2-Benzenedicarboxylic acid, dicyclohexyl ester	Structure:
Synonyms: Phthalic acid, dicyclohexyl ester	
Molecular Formula: C <sub>20</sub> H <sub>26</sub> O <sub>4</sub>	
Molecular Weight: 330.43	
Melting Point: 64-66 °C (M)	
Boiling Point: 395 °C (E)	
Vapor Pressure: 0.0007 mm Hg (M)	Henry's Law: 6.43e-6 atm·m <sup>3</sup> /mol (E)
Flash Point: NA °C (M)	
Water Solubility: 0.004 g/L (M)	
Density: 0.9 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 6.2 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 4.25 (E)	
Log <sub>10</sub> BCF: 4.48 (E)	
Function in ink: Plasticizer	

Dioctyl sulfosuccinate, sodium salt, CAS # 577-11-7	
Chemical Properties and Information	
Chemical Name: Sulfosuccinic acid 1,4-bis(2-ethylhexyl) ester, sodium salt	Structure:
Synonyms: Sulfobutanedioic acid, 1,4-bis(2-ethylhexyl) ester, sodium salt, Docusate Na	
Molecular Formula: C <sub>20</sub> H <sub>38</sub> O <sub>7</sub> S.Na	
Molecular Weight: 444.55	
Melting Point: 173-179 °C (M)	
Boiling Point: >500 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 15 g/L (M)	
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 3.949 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 3.018 (E)	
Log <sub>10</sub> BCF: 2.771 (E)	
Function in ink: Surfactant	Henry's Law: NA atm-m <sup>3</sup> /mol (E)

Diphenyl (2,4,6-trimethylbenzoyl) phosphine oxide, CAS # 75980-60-8	
Chemical Properties and Information	
Chemical Name: Phosphine oxide, diphenyl(2,4,6-trimethylbenzoyl)-	
Synonyms: None	Structure:
Molecular Formula: C <sub>22</sub> H <sub>21</sub> O <sub>2</sub> P	
Molecular Weight: 348.38	
Melting Point: 88-92 °C (M)	
Boiling Point: 474 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.00699 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 3.87 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 2.895 (E)	
Log <sub>10</sub> BCF: 2.713 (E)	
Function in ink: Initiator	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)

Dipropylene glycol diacrylate, CAS # 57472-68-1	
Chemical Properties and Information	
Chemical Name: 2-Propenoic acid, oxybis(methyl-2,1-ethanediyl) ester	
Synonyms: None	Structure:
Molecular Formula: C <sub>12</sub> H <sub>18</sub> O <sub>5</sub>	
Molecular Weight: 242.30	
Melting Point: -34 °C (E)	
Boiling Point: 256 °C (E)	
Vapor Pressure: 0.0194 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 0.968 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 1.675 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.0 (E)	
Log <sub>10</sub> BCF: 1.043 (E)	
Function in ink: Curing agent	

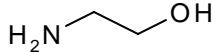
Dipropylene glycol methyl ether, CAS # 34590-94-8	
Chemical Properties and Information	
Chemical Name: 1,4-Dimethyl-3,6-dioxa-1-heptanol	
Synonyms: 1-(2-Methoxyisopropoxy)-2-propanol, (2-Methoxymethylethoxy)propanol	Structure:
Molecular Formula: C <sub>7</sub> H <sub>16</sub> O <sub>3</sub>	
Molecular Weight: 148.20	
Melting Point: -80 °C (M)	
Boiling Point: 189 °C (M)	
Vapor Pressure: 0.41 mm Hg (M)	
Flash Point: 74 °C (M)	
Water Solubility: 370 g/L	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 0.948 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -1.99 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.0 (E)	
Log <sub>10</sub> BCF: -0.381 (E)	
Function in ink: Solvent	

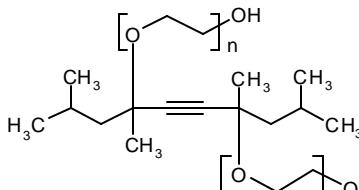
Distillates (petroleum), hydrotreated light, CAS # 64742-47-8	
Chemical Properties and Information	
Chemical Name: Distillates (petroleum), hydrotreated light	
Synonyms: Kerosene (petroleum), hydrotreated	Structure:
Molecular Formula: C <sub>9</sub> H <sub>20</sub> - C <sub>16</sub> H <sub>34</sub>	A complex combination of hydrocarbons obtained by treating a petroleum fraction with hydrogen in the presence of a catalyst. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 and C16 and boiling in the range of approximately 150 °C to 290 °C.
Molecular Weight: >130	
Melting Point: -60 °C (E)	
Boiling Point: 150-290 °C (E)	
Vapor Pressure: <5 mm Hg (E)	
Flash Point: NA °C (M)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Water Solubility: <0.003 g/L (E)	
Density: 0.8 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : >4.7 (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Defoamer	

Distillates (petroleum), solvent-refined light paraffinic, CAS # 64741-89-5	
Chemical Properties and Information	
Chemical Name: Solvent refined light paraffinic distillate (petroleum)	
Synonyms: None	Structure:
Molecular Formula: C <sub>15</sub> H <sub>32</sub> -C <sub>30</sub> H <sub>62</sub>	A complex combination of hydrocarbons obtained as the raffinate from a solvent extraction process. It consists predominantly of saturated hydrocarbons having carbon numbers predominantly in the range of C15-C30 and produces a finished oil with a viscosity of less than 100 SUS at 100 °F (19cSt at 40 °C).
Molecular Weight: >200 (E)	
Melting Point: <25 °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.03 mm Hg (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Flash Point: NA °C (M)	
Water Solubility: <0.00001 g/L (E)	
Density: 0.8 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Defoamer	

Erucamide, CAS # 112-84-5	
Chemical Properties and Information	
Chemical Name: cis-13-Docosenoamide	
Synonyms: Erucyl amide	Structure:
Molecular Formula: C <sub>22</sub> H <sub>43</sub> NO	
Molecular Weight: 337.59	
Melting Point: 79-81 °C (M)	
Boiling Point: 461 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.0002 g/L (E)	Henry's Law: 2.84E-6 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 8.445 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 6.071 (E)	
Log <sub>10</sub> BCF: 6.188 (E)	
Function in ink: Vehicle	

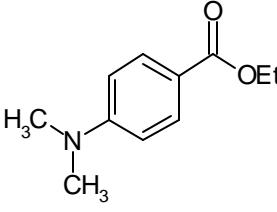
Ethanol, CAS # 64-17-5	
Chemical Properties and Information	
Chemical Name: Ethyl alcohol	
Synonyms: None	Structure:
Molecular Formula: C <sub>2</sub> H <sub>6</sub> O	
Molecular Weight: 46.07	
Melting Point: -114 °C (M)	
Boiling Point: 78 °C (M)	
Vapor Pressure: 59.3 (M), 61.5 (E)	
Flash Point: 8 °C (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: 5.67E-6 atm-m <sup>3</sup> /mol (E)
Density: 0.785 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -0.31 (M), -0.14 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0 (E)	
Log <sub>10</sub> BCF: -0.466 (E)	
Function in ink: Solvent	

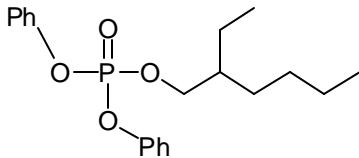
Ethanolamine, CAS # 141-43-5	
Chemical Properties and Information	
Chemical Name: 2-Aminoethanol	
Synonyms: Glycinol, 2-Hydroxyethylamine	Structure:
Molecular Formula: C <sub>2</sub> H <sub>7</sub> NO	
Molecular Weight: 61.08	
Melting Point: 10.5 °C (M)	
Boiling Point: 170 °C (M)	
Vapor Pressure: 0.404 mm Hg (M)	
Flash Point: 93 °C (M)	
Water Solubility: Miscible g/L	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1.012 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -1.31 (M), -1.61 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0 (E)	
Log <sub>10</sub> BCF: -1.22 (E)	
Function in ink: Buffer	

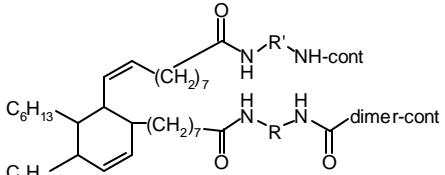
Ethoxylated tetramethyldecyndiol, CAS # 9014-85-1	
Chemical Properties and Information	
Chemical Name: Poly(oxy-1,2-ethanediyl), .alpha.,.alpha'-.[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[.omega.-hydroxy-	
Synonyms: Surfynol	Structure:
Molecular Formula:	
Molecular Weight: >500 (E)	
Melting Point: NA °C (E)	
Boiling Point: >300 °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: Dispersible g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Dispersant	

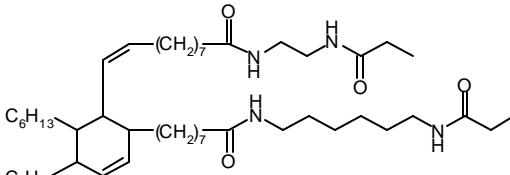
Ethyl acetate, CAS # 141-78-6	
Chemical Properties and Information	
Chemical Name: Acetic acid, ethyl ester	
Synonyms: Acetoxyethane, Ethyl ethanoate, Ethyl acetic ester	Structure:
Molecular Formula: C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	
Molecular Weight: 88.11	
Melting Point: -84 °C (M)	
Boiling Point: 76.5-77.5 °C (M)	
Vapor Pressure: 93.7 mm Hg (M)	
Flash Point: -3 °C (M); 7.2 °C (open)	
Water Solubility: 80 g/L (M)	Henry's Law: 0.000158 atm-m <sup>3</sup> /mol (E)
Density: 0.902 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.73 (M), 0.86 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0.788 (E)	
Log <sub>10</sub> BCF: 0.325 (E)	
Function in ink: Solvent	

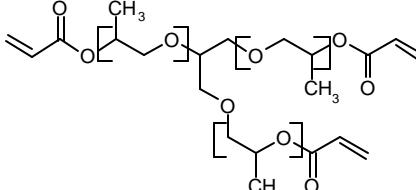
Ethyl carbitol, CAS # 111-90-0	
Chemical Properties and Information	
Chemical Name: 2-(2-Ethoxyethoxy)ethanol	
Synonyms: Diethylene glycol ethyl ether; 3,6-Dioxa-1-octanol	Structure:
Molecular Formula: C <sub>6</sub> H <sub>14</sub> O <sub>3</sub>	
Molecular Weight: 134.18	
Melting Point: -76 °C (E)	
Boiling Point: 202 °C (M)	
Vapor Pressure: 0.126 mm Hg (M)	
Flash Point: 96 °C (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 0.999 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -0.54 (M), -0.69 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0 (E)	
Log <sub>10</sub> BCF: -0.64 (E)	
Function in ink: Solvent	

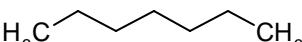
Ethyl 4-dimethylaminobenzoate, CAS # 10287-53-3	
Chemical Properties and Information	
Chemical Name: Benzoic acid, 4-(dimethylamino)-, ethyl ester	
Synonyms: Perbenate	Structure:
Molecular Formula: C <sub>11</sub> H <sub>15</sub> NO <sub>2</sub>	
Molecular Weight: 193.25	
Melting Point: 64-66 °C (M)	
Boiling Point: 269 °C (E)	
Vapor Pressure: 0.0044 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 0.173 g/L (E)	Henry's Law: 7.33E-7 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 2.89 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.824 (E)	
Log <sub>10</sub> BCF: 1.97 (E)	
Function in ink: Initiator	

2-Ethylhexyl diphenyl phosphate, CAS # 1241-94-7	
Chemical Properties and Information	
Chemical Name: Phosphoric acid, 2-ethylhexyl diphenyl ester	
Synonyms: None	Structure:
Molecular Formula: C <sub>20</sub> H <sub>27</sub> O <sub>4</sub> P	
Molecular Weight: 362.41	
Melting Point: 87 °C (E)	
Boiling Point: 443 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.0019 g/L (M)	Henry's Law: 2.7E-7 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 5.73 (M), 4.205 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 4.125 (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Plasticizer	

Fatty acid, dimer-based polyamide, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: C, H, N, O	
Molecular Weight: NAVG 2500	
Melting Point: NA °C (E)	
Boiling Point: >300 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m³/mol (E)
Density: 0.9 g/cm³ (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	R and R' are not known

Fatty acids, C18-unsatd., dimers, polymers with ethylenediamine, hexamethylenediamine, and propionic acid, CAS # 67989-30-4	
Chemical Properties and Information	
Chemical Name: Fatty acids, C18-unsatd., dimers, polymers with ethylenediamine, hexamethylenediamine, and propionic acid	
Synonyms: None	Structure:
Molecular Formula: C, H, N, O	
Molecular Weight: >600 (E)	
Melting Point: >100 °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m³/mol (E)
Density: 1 g/cm³ (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	Representative structure

Glycerol propoxylate triacrylate, CAS # 52408-84-1	
Chemical Properties and Information	
Chemical Name: Poly[oxy)methyl-1,2-ethanediyl)], .alpha.,.alpha'.,.alpha'',-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]-	Structure:
Synonyms: .alpha.,.alpha'.,.alpha'',-1,2,3-propanetriyltris[polypropylene glycol acrylate]	
Molecular Formula:	
Molecular Weight: >1000 (E)	
Melting Point: NA °C (M)	
Boiling Point: NA °C (M)	
Vapor Pressure: <0.000001 mm Hg (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Flash Point: >110 °C (E)	
Water Solubility: dispersible g/L (E)	
Density: 1.064 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Curing agent	

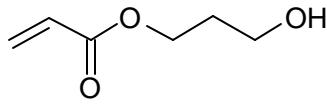
n-Heptane, CAS # 142-82-5	
Chemical Properties and Information	
Chemical Name: Heptane	
Synonyms: None	Structure:
Molecular Formula: C <sub>7</sub> H <sub>16</sub>	
Molecular Weight: 100.21	
Melting Point: -90.7 °C (M)	
Boiling Point: 98.4 °C (M)	
Vapor Pressure: 46 mm Hg (M)	
Flash Point: -1 °C open; -4 °C closed	
Water Solubility: 0.0034 g/L (M)	Henry's Law: 2.27 atm-m <sup>3</sup> /mol (E)
Density: 0.684 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 4.66 (M), 3.78 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 2.439 (E)	
Log <sub>10</sub> BCF: 3.312 (E)	
Function in ink: Solvent	

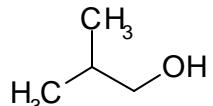
1,6-Hexanediol diacrylate, CAS # 13048-33-4	
Chemical Properties and Information	
Chemical Name: 2-Propenoic acid, 1,6-hexanediyl ester	Structure:
Synonyms: Acrylic acid, hexamethylene ester, HDODA	
Molecular Formula: C <sub>12</sub> H <sub>18</sub> O <sub>4</sub>	
Molecular Weight: 226.28	
Melting Point: -30 °C (E)	
Boiling Point: 259 °C (E)	
Vapor Pressure: 0.0166 mm Hg (E)	
Flash Point: >110 °C (E)	
Water Solubility: 0.0748 g/L (E)	Henry's Law: 3.7E-8 atm-m <sup>3</sup> /mol (E)
Density: 1.01 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 3.079 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 2.101 (E)	
Log <sub>10</sub> BCF: 2.110 (E)	
Function in ink: Curing agent	

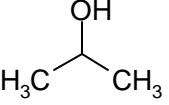
1-Hydroxycyclohexyl phenyl ketone, CAS # 947-19-3	
Chemical Properties and Information	
Chemical Name: (1-Hydroxycyclohexyl)phenylmethanone	
Synonyms: None	Structure:
Molecular Formula: C <sub>13</sub> H <sub>16</sub> O <sub>2</sub>	
Molecular Weight: 204.27	
Melting Point: 47-50 °C (M)	
Boiling Point: 290 °C (M)	
Vapor Pressure: 0.000165 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 1.882 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 2.405 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.731 (E)	
Log <sub>10</sub> BCF: 1.598 (E)	
Function in ink: Vehicle	

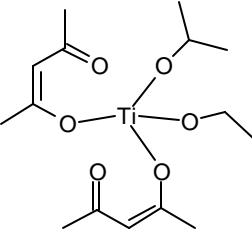
Hydroxylamine derivative, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: C, H, N, O	
Molecular Weight: 100-150 (E)	
Melting Point: NA °C (E)	
Boiling Point: 230-300 °C (E)	
Vapor Pressure: <0.01 mm Hg (E)	R and R' are not specified
Flash Point: NA °C (M)	
Water Solubility: <20 g/L (E)	
Density: 0.9 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Inhibitor	

2-Hydroxy-2-methylpropiophenone, CAS # 7473-98-5	
Chemical Properties and Information	
Chemical Name: 2-Hydroxy-2-methyl-1-phenyl-1-propanone	
Synonyms: None	Structure:
Molecular Formula: C <sub>10</sub> H <sub>12</sub> O <sub>2</sub>	
Molecular Weight: 164.20	
Melting Point: 54.5 °C (E)	
Boiling Point: 235 °C (M)	
Vapor Pressure: 0.00429 mm Hg (E)	
Flash Point: >110 °C (E)	
Water Solubility: 25.3 g/L (E)	
Density: 1.077 g/cm <sup>3</sup> (M)	Henry's Law: 2.7E-6 atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : 1.08 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.0 (E)	
Log <sub>10</sub> BCF: 0.591 (E)	
Function in ink: Solvent	

Hydroxypropyl acrylate, CAS # 25584-83-2	
Chemical Properties and Information	
Chemical Name: 2-Propenoic acid, monoester with 1,2-propanediol	Structure:
Synonyms: Propyleneglycol acrylate, Acrylic acid, hydroxypropyl ester	
Molecular Formula: C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	
Molecular Weight: 130.14	
Melting Point: -4.4 °C (E)	
Boiling Point: 191 °C (M)	
Vapor Pressure: 0.124 mm Hg (E)	
Flash Point: 89 °C (M)	
Water Solubility: 183.5 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1.044 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.245 (E)	
Log <sub>10</sub> K <sub>oc</sub> : -0.044 (E)	
Log <sub>10</sub> BCF: 0.904 (E)	
Function in ink: Reactive diluent	

Isobutanol, CAS # 78-83-1	
Chemical Properties and Information	
Chemical Name: 2-Methyl-1-propanol	Structure:
Synonyms: 1-Hydroxymethylpropane, Isobutyl alcohol	
Molecular Formula: C <sub>4</sub> H <sub>10</sub> O	
Molecular Weight: 74.12	
Melting Point: -108 °C (M)	
Boiling Point: 107.89 °C (M)	
Vapor Pressure: 10.4 mm Hg (M)	
Flash Point: 27 °C closed cup (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: 9.99E-6 atm-m <sup>3</sup> /mol (E)
Density: 0.803 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.76 (M), 0.77 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0.311 (E)	
Log <sub>10</sub> BCF: 0.348 (E)	
Function in ink: Solvent	

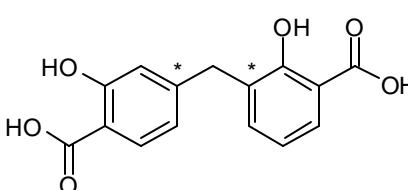
Isopropanol, CAS # 67-63-0	
Chemical Properties and Information	
Chemical Name: 2-Propanol	
Synonyms: Isopropyl alcohol, 2-propyl alcohol	Structure:
Molecular Formula: C <sub>3</sub> H <sub>8</sub> O	
Molecular Weight: 6.10	
Melting Point: -88.5 °C (M)	
Boiling Point: 82.5 °C (M)	
Vapor Pressure: 45.4 mm Hg (M)	
Flash Point: 11.7 °C closed cup (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: 7.52E-6 atm-m <sup>3</sup> /mol (E)
Density: 0.785 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.05 (M), 0.28 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0.025 (E)	
Log <sub>10</sub> BCF: -0.192 (E)	
Function in ink: Solvent	

Isopropoxyethoxytitanium bis(acetylacetonate), CAS # 68586-02-7	
Chemical Properties and Information	
Chemical Name: Titanium, ethoxybis(2,4-pentanedionato-O,O')(2-propanolato)-	
Synonyms: 2-Propanol, titanium complex	Structure:
Molecular Formula: C <sub>15</sub> H <sub>26</sub> O <sub>6</sub> Ti	
Molecular Weight: 350.25	
Melting Point: NA °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.01 mm Hg (E)	
Flash Point: 30 °C (E)	
Water Solubility: Reacts	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1.1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Adhesion promoter	

2-Isopropylthioxanthone, CAS # 5495-84-1	
Chemical Properties and Information	
Chemical Name: 9H-Thioxanthen-9-one, 2-(1-methylethyl)-	
Synonyms: None	Structure:
Molecular Formula: C <sub>16</sub> H <sub>14</sub> OS	
Molecular Weight: 254.35	
Melting Point: 141.7 °C (E)	
Boiling Point: 379 °C (E)	
Vapor Pressure: 0.000002 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 0.000032 g/L (E)	Henry's Law: 9.99E-8 atm·m <sup>3</sup> /mol (E)
Density: 0.9 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 5.54 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 3.983 (E)	
Log <sub>10</sub> BCF: 3.980 (E)	
Function in ink: Photoinitiator	

4-Isopropylthioxanthone, CAS # 83846-86-0	
Chemical Properties and Information	
Chemical Name: 9H-Thioxanthen-9-one, 4-(1-methylethyl)-	
Synonyms: None	Structure:
Molecular Formula: C <sub>16</sub> H <sub>14</sub> OS	
Molecular Weight: 254.35	
Melting Point: 141.7 °C (E)	
Boiling Point: 379 °C (E)	
Vapor Pressure: 0.000002 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: 0.000032 g/L (E)	Henry's Law: 9.99E-8 atm·m <sup>3</sup> /mol (E)
Density: 0.9 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 5.54 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 3.983 (E)	
Log <sub>10</sub> BCF: 3.980 (E)	
Function in ink: Photoinitiator	

Kaolin, CAS # 1332-58-7	
Chemical Properties and Information	
Chemical Name: Kaolin	
Synonyms: Clays, white, Aluminum silicate hydroxide	Structure:
Molecular Formula: Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	A clay that is essentially kaolinite, a hydrated aluminum silicate. It has a high fusion point and is the most refractory of all clays.
Molecular Weight: 258.16 (from Emp.)	
Melting Point: >500 °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 2.75 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Pigment	

Methylenedisalicylic acid, CAS # 27496-82-8	
Chemical Properties and Information	
Chemical Name: Benzoic acid, methylenebis[2-hydroxy-	
Synonyms: Methylenedisalicylic acid	Structure:
Molecular Formula: C <sub>15</sub> H <sub>12</sub> O <sub>6</sub>	
Molecular Weight: 288.26	
Melting Point: 220 °C (E)	
Boiling Point: 517 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 0.0076 g/L (E)	Henry's Law: <1E-6 atm-m <sup>3</sup> /mol (E)
Density: 0.9 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 4.52 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 4.13 (E)	
Log <sub>10</sub> BCF: 3.2 (E)	
Function in ink: NA, crosslinker (E)	

<b>2-Methyl-4'-(methylthio)-2-morpholinopropiophenone, CAS # 71868-10-5</b>	
Chemical Properties and Information	
Chemical Name: 2-Methyl-4'-(methylthio)-2-morpholinopropiophenone	
Synonyms: None	Structure:
Molecular Formula: C <sub>15</sub> H <sub>21</sub> NO <sub>2</sub> S	
Molecular Weight: 279.40	
Melting Point: 74-76 °C (M)	
Boiling Point: 372°C (E)	
Vapor Pressure: 0.0000135 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 1.077 g/L (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 2.726 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 2.552 (E)	
Log <sub>10</sub> BCF: 1.842 (E)	
Function in ink: Antioxidant, photoinitiator	

<b>Mineral oil, CAS # 8012-95-1</b>	
Chemical Properties and Information	
Chemical Name: Mineral oil	
Synonyms: Paraffin oils	Structure:
Molecular Formula: C, H	Liquid hydrocarbons from petroleum.
Molecular Weight: >100 (E)	
Melting Point: <25 °C (E)	
Boiling Point: >200 °C (E)	
Vapor Pressure: <0.01 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.0001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 0.85 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Vehicle	

Nitrocellulose, CAS # 9004-70-0	
Chemical Properties and Information	
Chemical Name: Cellulose nitrate	
Synonyms: None	Structure:
Molecular Formula: C, H, N, O	
Molecular Weight: >1000 (E)	
Melting Point: NA °C (M)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 1000 (miscible) g/L	
Density: 1 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	

Paraffin wax, CAS # 8002-74-2	
Chemical Properties and Information	
Chemical Name: Paraffin waxes and hydrocarbon waxes	
Synonyms: Paraffin	Structure:
Molecular Formula: C <sub>n</sub> H <sub>2n+2</sub> (n>20,	A complex combination of hydrocarbons
Molecular Weight: >280 (TYPCL)	obtained from petroleum fractions (by solvent
Melting Point: 50-57 °C (M)	crystallization or the sweating process) or
Boiling Point: >250 °C (E)	from the catalytic hydrogenation of carbon
Vapor Pressure: <0.0004 mm Hg (E)	monoxide. It consists predominantly of
Flash Point: NA °C (M)	straight chain hydrocarbons having carbon
Water Solubility: <0.000001 g/L (E)	numbers predominantly greater than C20.
Density: about 0.9 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Wax	

**Phosphine oxide, bis(2,6-dimethoxybenzoyl)(2,4,4-trimethylpentyl)-,**  
CAS # 145052-34-2

Chemical Properties and Information

Chemical Name: Phosphine oxide, bis(2,6-dimethoxybenzoyl)(2,4,4-trimethylpentyl)-

Synonyms: None

Molecular Formula: C<sub>26</sub>H<sub>35</sub>O<sub>7</sub>P

Molecular Weight: 490.54

Melting Point: 90 °C (E)

Boiling Point: 480 °C (E)

Vapor Pressure: <0.000001 mm Hg

Flash Point: NA °C (M)

Water Solubility: 0.00054 g/L (E)

Density: 1 g/cm<sup>3</sup> (E)

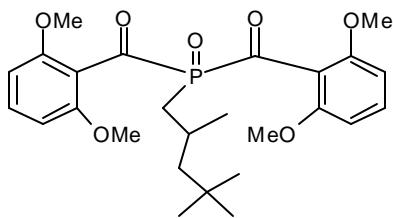
Log<sub>10</sub>K<sub>ow</sub>: 3.724 (E)

Log<sub>10</sub>K<sub>oc</sub>: 2.528 (E)

Log<sub>10</sub>BCF: 2.60 (E)

Function in ink: Plasticizer

Structure:



Henry's Law: <1E-8 atm-m<sup>3</sup>/mol (E)

**Polyethylene, CAS # 9002-88-4**

Chemical Properties and Information

Chemical Name: Polyethylene

Synonyms: Ethylene polymer

Molecular Formula: (C<sub>2</sub>H<sub>4</sub>)<sub>n</sub>

Molecular Weight: 1500 -100,000

Melting Point: 85-110 °C (M)

Boiling Point: NA °C (M)

Vapor Pressure: <0.000001 mm Hg

Flash Point: NA °C (M)

Water Solubility: <0.000001 g/L (E)

Density: 0.92 g/cm<sup>3</sup> (M)

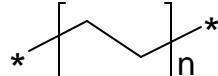
Log<sub>10</sub>K<sub>ow</sub>: NA (E)

Log<sub>10</sub>K<sub>oc</sub>: NA (E)

Log<sub>10</sub>BCF: NA (E)

Function in ink: Wax

Structure:



Henry's Law: NA atm-m<sup>3</sup>/mol (E)

Polyethylene glycol, CAS # 25322-68-3	
Chemical Properties and Information	
Chemical Name: Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-	
Synonyms: PEG, Polyglycol, Polyoxyethylene	Structure:
Molecular Formula: $(C_2H_4O)_n$	
Molecular Weight: 200 - 9000	
Melting Point: -65 °C (M)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1.1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Dispersant	

Polyol derivative A, CAS # NK	
Chemical Properties and Information	
Chemical Name: Polyol derivative A	
Synonyms: None	Structure:
Molecular Formula: C, H, O	
Molecular Weight: >400	
Melting Point: >280 °C (E)	
Boiling Point: >600 °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: >300 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : -2.76 (E)	
$\log_{10}K_{oc}$ : 1.0 (E)	
$\log_{10}BCF$ : -2.33 (E)	
Function in ink: Resin	

Polytetrafluoroethylene, CAS # 9002-84-0	
Chemical Properties and Information	
Chemical Name: Polytetrafluoroethylene	
Synonyms: PTFE, Polytef, Teflon	Structure:
Molecular Formula: $(C_2F_4)_n$	
Molecular Weight: >1000 (E)	
Melting Point: 321 (gels) °C (M)	
Boiling Point: monomer gas formed at 400	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 2.25 g/cm <sup>3</sup> (M)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Wax	

Propanol, CAS # 71-23-8	
Chemical Properties and Information	
Chemical Name: 1-Propanol	
Synonyms: n-Propyl alcohol, 1-hydroxypropane	Structure:
Molecular Formula: C <sub>3</sub> H <sub>8</sub> O	
Molecular Weight: 60.10	
Melting Point: -127 °C (M)	
Boiling Point: 97.2 °C (M)	
Vapor Pressure: 21 (M), 23.4 (E) mm	
Flash Point: 15 °C (M)	
Water Solubility: 1000 (miscible) g/L	Henry's Law: 7.52E-6 atm-m <sup>3</sup> /mol (E)
Density: 0.804 g/cm <sup>3</sup> (M)	
$\log_{10}K_{ow}$ : 0.25 (M), 0.35 (E)	
$\log_{10}K_{oc}$ : 0.122 (E)	
$\log_{10}BCF$ : -0.04 (E)	
Function in ink: Solvent	

Propyl acetate, CAS # 109-60-4	
Chemical Properties and Information	
Chemical Name: Acetic acid, propyl ester	
Synonyms: 1-Acetoxypropane	Structure:
Molecular Formula: C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	
Molecular Weight: 102.13	
Melting Point: -92 °C (M)	
Boiling Point: 101.6 °C (M)	
Vapor Pressure: 33.7 (M), 34.4 (E)	
Flash Point: 14 °C closed cup (M)	
Water Solubility: 18.9 (M), 15.5 (E)	Henry's Law: 0.000223 atm-m <sup>3</sup> /mol (E)
Density: 0.888 g/cm <sup>3</sup>	
Log <sub>10</sub> K <sub>ow</sub> : 1.24 (M), 1.36 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.053 (E)	
Log <sub>10</sub> BCF: 0.712 (E)	
Function in ink: Solvent	

Propylene glycol methyl ether, CAS # 107-98-2	
Chemical Properties and Information	
Chemical Name: 1-Methoxy-2-propanol	
Synonyms: None	Structure:
Molecular Formula: C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	
Molecular Weight: 90.12	
Melting Point: -142 °C (M)	
Boiling Point: 118-119 °C (M)	
Vapor Pressure: 12.5 mm Hg (M)	
Flash Point: 33 °C (M)	
Water Solubility: 1000 g/L (miscible)	Henry's Law: 1.81E-8 atm-m <sup>3</sup> /mol (E)
Density: 0.922 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -0.489 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0 (E)	
Log <sub>10</sub> BCF: -0.602 (E)	
Function in ink: Solvent	

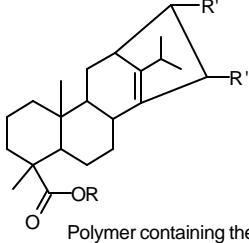
Propylene glycol propyl ether, CAS # 1569-01-3	
Chemical Properties and Information	
Chemical Name: 1-Propoxy-2-propanol	
Synonyms: None	Structure:
Molecular Formula: C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>	
Molecular Weight: 118.18	
Melting Point: -80 °C (M)	
Boiling Point: 140-160 °C (M)	
Vapor Pressure: 1.7 mm Hg (M)	
Flash Point: 48 °C (M)	
Water Solubility: 125 g/L (E)	Henry's Law: 3.46E-8 atm-m <sup>3</sup> /mol (E)
Density: 0.885 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 0.49 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0 (E)	
Log <sub>10</sub> BCF: 0.145 (E)	
Function in ink: Solvent	

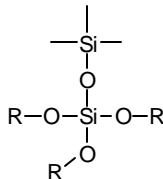
Resin acids, hydrogenated, methyl esters, CAS # 8050-15-5	
Chemical Properties and Information	
Chemical Name: Resin acids and rosin acids, hydrogenated, Me esters	
Synonyms: Hydrogenated resin acid Me esters	Structure:
Molecular Formula: C <sub>21</sub> H <sub>36</sub> O <sub>2</sub> (TYPCL)	
Molecular Weight: 320.5	
Melting Point: 113 °C (E)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.00002 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.00001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 6.918 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 5.07 (E)	
Log <sub>10</sub> BCF: 5.028 (E)	
Function in ink: Resin	Representative structure

Resin, acrylic, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: C, H, O	
Molecular Weight: NAVG >30,000 (E)	
Melting Point: NA °C (E)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.000001 mm Hg	R = H and/or other
Flash Point: NA °C (M)	
Water Solubility: >500 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	

Resin, miscellaneous, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure: Unknown
Molecular Formula: C, H, O	
Molecular Weight: NAVG 30,000 (E)	
Melting Point: NA °C (E)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	



Rosin, polymerized, CAS # 65997-05-9	
Chemical Properties and Information	
Chemical Name: Rosin, polymd.	
Synonyms: Gum rosin WW, polymers; Wood rosin, Poly-pale resin	Structure:  Polymer containing the above resin
Molecular Formula: C <sub>20</sub> H <sub>30</sub> O <sub>2</sub>	
Molecular Weight: NAVG >1000 (E)	
Melting Point: NA °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	

Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica, CAS # 68909-20-6	
Chemical Properties and Information	
Chemical Name: Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	
Synonyms: None	Structure:  R = H or continued polymer
Molecular Formula: C <sub>6</sub> H <sub>18</sub> O <sub>2</sub> Si	
Molecular Weight: >10000 (E)	
Melting Point: >500 °C (E)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1.5 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Defoamer	

Silica, CAS # 7631-86-9	
Chemical Properties and Information	
Chemical Name: Silicon dioxide	
Synonyms: Silicic anhydride	Structure:
Molecular Formula: SiO <sub>2</sub>	O=Si=O
Molecular Weight: >10,000 (60.09 from Emp.)	
Melting Point: 1550 °C (M)	
Boiling Point: NA °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: <0.00001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 2.2 (amorphous) g/cm <sup>3</sup> (M); 2.65	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: NA, defoamer (E)	

Silicone oil, CAS # 63148-62-9	
Chemical Properties and Information	
Chemical Name: Siloxanes and silicones, di-Me	
Synonyms: .alpha.-Methyl-.omega.-methoxypolydimethyl siloxane, Poly(dimethylsiloxane)	Structure:
Molecular Formula: (Si(CH <sub>3</sub> ) <sub>2</sub> O) <sub>n</sub>	
Molecular Weight: >1000 (E)	
Melting Point: <-40 °C (E)	
Boiling Point: >450 °C (E)	
Vapor Pressure: <0.000001 mm Hg	R = H or continued polymer
Flash Point: 315 °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: atm-m <sup>3</sup> /mol (E)
Density: 0.963 g/cm <sup>3</sup>	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: NA, defoamer (E)	

**Siloxanes and silicones, di-Me, 3-hydroxypropyl Me, ethers with polyethylene glycol acetate, CAS # 70914-12-4**

Chemical Properties and Information

Chemical Name: Siloxanes and silicones, di-Me, 3-hydroxypropyl Me, esters with polyethylene glycol acetate

Synonyms: None

Molecular Formula: C, H, O, Si

Molecular Weight: >1000 (E)

Melting Point: >100 °C (E)

Boiling Point: >350 °C (E)

Vapor Pressure: <0.000001 mm Hg

Flash Point: NA °C (M)

Water Solubility: Dispersible g/L (E)

Density: 1 g/cm<sup>3</sup> (E)

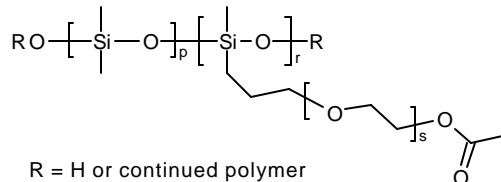
Log<sub>10</sub>K<sub>ow</sub>: NA (E)

Log<sub>10</sub>K<sub>oc</sub>: NA (E)

Log<sub>10</sub>BCF: NA (E)

Function in ink: wetting agent,

Structure:



Henry's Law: NA atm-m<sup>3</sup>/mol (E)

**Solvent naphtha (petroleum), light aliphatic, CAS # 64742-89-8**

Chemical Properties and Information

Chemical Name: Solvent naphtha(petroleum), light aromatic

Synonyms: Skellysolve

Molecular Formula: C<sub>5</sub>H<sub>10</sub>-C<sub>10</sub>H<sub>22</sub>

Molecular Weight: 100 (E)

Melting Point: <-80 °C (E)

Boiling Point: 35-160 °C (E)

Vapor Pressure: <355 mm Hg (E)

Flash Point: NA °C (M)

Water Solubility: <0.2 g/L (E)

Density: 0.8 g/cm<sup>3</sup> (E)

Log<sub>10</sub>K<sub>ow</sub>: NA (E)

Log<sub>10</sub>K<sub>oc</sub>: NA (E)

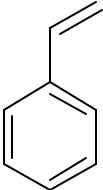
Log<sub>10</sub>BCF: NA (E)

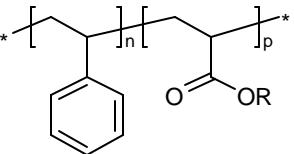
Function in ink: Solvent

Structure:

Complex combination of hydrocarbons obtained from the distillation of crude oil or natural gas. It consists predominantly of saturated hydrocarbons having carbon numbers predominantly in the range of C5 through C10 and boiling in the range of approximately 35 °C to 160 °C.

Henry's Law: NA atm-m<sup>3</sup>/mol (E)

Styrene, CAS # 100-42-5	
Chemical Properties and Information	
Chemical Name: Ethenylbenzene	
Synonyms: Vinylbenzene	Structure:
Molecular Formula: C <sub>8</sub> H <sub>8</sub>	
Molecular Weight: 104.15	
Melting Point: -31 °C (M)	
Boiling Point: 145-146 °C (M)	
Vapor Pressure: 6.4 mm Hg (M)	
Flash Point: 31 °C (M)	
Water Solubility: 0.31 g/L (M)	Henry's Law: 0.00281 atm-m <sup>3</sup> /mol (E)
Density: 0.909 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 2.95 (M), 2.89 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 2.714 (E)	
Log <sub>10</sub> BCF: 2.102 (E)	
Function in ink: Curing agent	

Styrene acrylic acid polymer #1, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: Styrene acrylic acid polymer	Structure:
Molecular Formula: C, H, O	
Molecular Weight: NAVG > 30,000	
Melting Point: NA °C (E)	
Boiling Point: >300 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	R = H and/or other
Water Solubility: <0.000001 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	

Styrene acrylic acid polymer #2, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: Styrene acrylic adic polymer	Structure:
Molecular Formula: C, H, O	
Molecular Weight: NAVG >10,000	
Melting Point: NA °C (E)	
Boiling Point: >300 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	R = H and/or other

Styrene acrylic acid resin, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: Styrene acrylic acid resin	Structure:
Molecular Formula: C, H, O	
Molecular Weight: >10000	
Melting Point: NA °C (E)	
Boiling Point: >300 °C (E)	
Vapor Pressure: <0.000001 mm Hg	
Flash Point: NA °C (M)	
Water Solubility: <0.000001 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Resin	Henry's Law: NA atm-m <sup>3</sup> /mol (E) R = H or other

Tetramethyldecyndiol, CAS # 126-86-3	
Chemical Properties and Information	
Chemical Name: 2,4,7,9-Tetramethyl-5-decyne-4,7-diol	
Synonyms: Surfynol 104	Structure:
Molecular Formula: C <sub>14</sub> H <sub>26</sub> O <sub>2</sub>	
Molecular Weight: 226.36	
Melting Point: 42-44 °C (M)	
Boiling Point: 255 °C (M)	
Vapor Pressure: 0.00099 mm Hg (E)	Henry's Law: 2.44E-7 atm-m <sup>3</sup> /mol (E)
Flash Point: >110 °C (E)	
Water Solubility: 0.052 g/L (E)	
Density: 1 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : 3.609 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 1.328 (E)	
Log <sub>10</sub> BCF: 2.513 (E)	
Function in ink: Solvent	

Thioxanthone derivative, CAS # NK	
Chemical Properties and Information	
Chemical Name: NK	
Synonyms: NK	Structure:
Molecular Formula: C, H, O, S	
Molecular Weight: 260 (E) (for R = iPr)	
Melting Point: 150 °C (E)	
Boiling Point: >350 °C (E)	
Vapor Pressure: <0.00001 mm Hg (E)	R position and content unspecified
Flash Point: NA °C (M)	
Water Solubility: <0.00005 g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 0.9 g/cm <sup>3</sup> (E)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Photoinitiator	

Titanium diisopropoxide bis(2,4-pentanedionate) CAS# 17927-72-9	
Chemical Properties and Information	
Chemical Name: Titanium, bis(2,4-pentanedionato-.kappa.O,.kappa.O')bis(2-propanolato)-	
Synonyms: 2-Propanol, titanium complex; diisopropoxytitanium bis(acetylacetone)	Structure:
Molecular Formula: C <sub>16</sub> H <sub>28</sub> O <sub>6</sub> Ti	
Molecular Weight: 364.30	
Melting Point: NA °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.01 mm Hg (E)	
Flash Point: 12 °C (M)	
Water Solubility: Reacts	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 0.995 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Adhesion promoter	

Titanium isopropoxide, CAS# 546-68-9	
Chemical Properties and Information	
Chemical Name: 2-Propanol, titanium(4+) salt	
Synonyms: Tetraisopropyl titanate	Structure:
Molecular Formula: C <sub>12</sub> H <sub>32</sub> O <sub>4</sub> Ti	
Molecular Weight: 284.26	
Melting Point: 18-20 °C (M)	
Boiling Point: 232 °C (M)	
Vapor Pressure: 0.11 mm Hg (E)	
Flash Point: 22 °C (M)	
Water Solubility: Reacts	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 0.963 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : NA (E)	
Log <sub>10</sub> K <sub>oc</sub> : NA (E)	
Log <sub>10</sub> BCF: NA (E)	
Function in ink: Adhesion promoter	

Trimethylolpropane ethoxylate triacrylate, CAS # 28961-43-5	
Chemical Properties and Information	
Chemical Name: Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propenyl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	Structure:
Synonyms: Ethoxylated trimethylolpropane, triacrylate	
Molecular Formula: $(C_2H_4O)_n(C_2H_4O)_nC_2H_4O_nC_{15}H_{20}O_6$	
Molecular Weight: >500 (E)	
Melting Point: NA °C (E)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: NA °C (M)	
Water Solubility: Dispersible g/L	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Curable resin	

Trimethylolpropane propoxylate triacrylate, CAS # 53879-54-2	
Chemical Properties and Information	
Chemical Name: Poly(oxy-(methyl-1,2-ethanediyl)), .alpha.-hydro-.omega.-((1-oxo-2-propenyl)oxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	
Synonyms: None	Structure:
Molecular Formula:	
Molecular Weight: >500 (E)	
Melting Point: NA °C (M)	
Boiling Point: >250 °C (E)	
Vapor Pressure: <0.000001 mm Hg (E)	
Flash Point: >110 °C (E)	
Water Solubility: Dispersible g/L (E)	Henry's Law: NA atm-m <sup>3</sup> /mol (E)
Density: 1 g/cm <sup>3</sup> (E)	
$\log_{10}K_{ow}$ : NA (E)	
$\log_{10}K_{oc}$ : NA (E)	
$\log_{10}BCF$ : NA (E)	
Function in ink: Curable resin	

Trimethylolpropane triacrylate, CAS # 15625-89-5	
Chemical Properties and Information	
Chemical Name: 2-Propenoic acid, 2-ethyl-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediol	Structure:
Synonyms: TMPT, acrylic acid, triester with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol	
Molecular Formula: C <sub>15</sub> H <sub>20</sub> O <sub>6</sub>	
Molecular Weight: 296.32	
Melting Point: 27 °C (E)	
Boiling Point: 322 °C (E)	
Vapor Pressure: 0.000563 mm Hg (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Flash Point: >110 °C (E)	
Water Solubility: 0.0463 g/L (E)	
Density: 1.10 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : 2.863 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 3.282 (E)	
Log <sub>10</sub> BCF: 1.946 (E)	
Function in ink: Curing agent	

Urea, CAS # 57-13-6	
Chemical Properties and Information	
Chemical Name: Urea	Structure:
Synonyms: Carbamide, Carbonyldiamine, Carbonyl diamide	
Molecular Formula: CH <sub>4</sub> N <sub>2</sub> O	
Molecular Weight: 60.06	
Melting Point: 133-135 °C (M)	
Boiling Point: 158 °C (dec) (E)	
Vapor Pressure: 0.207 mm Hg (E)	Henry's Law: <1E-8 atm-m <sup>3</sup> /mol (E)
Flash Point: °C (M)	
Water Solubility: 1000 g/L (miscible)	
Density: 1.335 g/cm <sup>3</sup> (M)	
Log <sub>10</sub> K <sub>ow</sub> : -2.11 (M), -1.56 (E)	
Log <sub>10</sub> K <sub>oc</sub> : 0.632 (E)	
Log <sub>10</sub> BCF: -1.834 (E)	
Function in ink: Slip additive	